What is claimed is:

1. An optical fiber chromatic dispersion distribution measuring apparatus comprising:

two light sources for outputting light beams having different wavelengths from each other, respectively, to an optical fiber under test;

an optical time domain reflectometer for measuring four-wave mixing light beams generated by an interaction between backscattered light beams of the light beams inputted to the optical fiber under test;

an optical bandpass filter having a fixed center wavelength; and

a coherence controller for controlling coherence of at least one of the outputted light beams of the two light sources,

wherein at least one of the two light source is a tunable light source;

the optical bandpass filter is disposed at a previous stage of the optical time domain reflectometer.

2. An optical fiber chromatic dispersion distribution measuring apparatus comprising:

two light sources for outputting CW light beams having different wavelengths from each other, respectively;

a coherence controller for controlling coherence of at least one of the CW light beams of the two light sources;

an optical coupler for combining a plurality of light beams;

a modulator;

an optical fiber amplifier;

a directional coupler;

an optical fiber under test;

an optical bandpass filter having a fixed center wavelength; and

an optical time domain reflectometer;

wherein at least one of the two light source is a tunable light source;

the two light sources output the CW light beams to the optical coupler;

the optical coupler combines the CW light beams and outputs the combined CW light beams to the modulator;

the modulator modulates the CW light beams inputted from the optical coupler to generate pulse light beams having different wavelengths from each other and outputs the pulse light beams to the optical fiber amplifier;

the optical fiber amplifier amplifies the pulse light beams and outputs the amplified pulse light beams to the directional coupler;

the directional coupler outputs the pulse light beams inputted from the optical fiber amplifier to the optical fiber under test and outputs a light beam inputted from the optical fiber under test to the optical bandpass filter;

four-wave mixing light beams are generated in the optical fiber under test due to an interaction between the pulse light beams inputted from the directional coupler and is outputted to the directional coupler;

the optical bandpass filter extracts a light beam within a specific band from the light beam inputted from the directional coupler and outputs the extracted light beam to the optical time domain refelectometer; and

the optical time domain reflectometer measures the chromatic dispersion distribution of the extracted light beam.

3. The apparatus according to claim 2, wherein the four-wave mixing light beams are a light beam generated in lower frequency side than the pulse light beams and a light beam generated in higher frequency side than the pulse light beams; and

only one of the four-wave mixing light beams is within the specific band of the optical bandpass filter.

4. An optical fiber chromatic dispersion distribution measuring method comprising the steps of:

outputting two light beams having different wavelengths from each other, respectively, to an optical fiber under test;

controlling coherence of at least one of the light beams;

generating two four-wave mixing light beams in the optical fiber under test;

measuring one of the two four-wave mixing light beams to obtain the chromatic dispersion distribution of the optical fiber under test.

5. An optical fiber chromatic dispersion distribution measurement method comprising the steps of:

outputting two CW light beams having different wavelengths from each other;

controlling coherence of at least one of the CW light beams;

combining the CW light beams;

modulating the CW light beams to generate two pulse light beams having the different wavelengths from each other;

amplifying the pulse light beams;

inputting the pulse light beams to an optical fiber under test to generate two four-wave mixing light beams;

extracting one of the four-wave mixing light beams; and

measuring the one of the four-wave mixing light beams to obtain the chromatic dispersion distribution of the optical fiber under test.

6. The method according to claim 5, further comprising the steps of adjusting both wavelengths of the two light beams so that wavelength of the one of the four-wave mixing light beams coincides with a center wavelength of an optical bandpass filter having a fixed center wavelength for executing the extracting step.

7. The method according to claim 5, wherein ratio of the intensity of the two CW light beams is approximately 2:1.